

Figure 1

a.

E_{CTA}M_{AGG}113

CTAF

ALLELE 1: 1 TTAAGGGATATGTTTTTTCACATAAG-CtGTAAAAATTCACCC--AgATTTTTCATTTTctttgaaaaaatgt

|||||

ALLELE 2: 1 TTAAGGGATATGTTTTTTCACATAATGc-GTAAAAATTCACCCca-ATTTTTCATTT-----

CTAR

ALLELE 1: 74 tagatatATCATGTTTTTTTACAAGCATTACAATAATATTCACTCGTATATTAGGAATTC 133

|||||

ALLELE 2: 61 -----ATCATGTTTTTTTACAAGCATTACAATAATATTCACTCGTATATTAGGAATTC 113

E_{CCG}M_{AAC}405

A_{2D8F}

ALLELE1: 1 TTA^AAAACCTTGGGTGATCGGTATTACAGTACGAGGGCCA-----ATCAACTAAAAATA-TcTGCA

|||||

ALLELE2: 1 TTA^AAAACCTTGGGTGATCGGTATTACAGTACGAGGGCCATggtttgagccaATCAACTAAAAATATT-TGCA

A_{2D8R}

ALLELE1: 62 AACGATAATAATAATTATAAGAAAAAGAC-acACTTTGAGGGCATTTTTTGACTTGAGAGAACTCAGGTATCAATCTAA

|||||

ALLELE2: 74 AACGATAATAATAATTATAAGAAAAAGACT-CACITTTGAGGGCATTTTTTGACTTGAGAGAACTCAGGTATCAATCTAA

ALLELE1: 138 AAGCAACGCTGTTACCTTGAGCTGA^AAACACCTGGAGAGAAAGCAAAGCAAACCAACCGGAGAGAGAAATAAG

|||||

ALLELE2: 150 AAGCAACGCTGTTACCTTGAGCTGA^AAACACCTGGAGAGAAAGCAAAGCAAACCAACCGGAGAGAGAAATAAG

MICROSATELLITE

ALLELE1: 214 AACGGAAACagagAGAGAGAGAGAGAGACCTTGTTCAAAGCAACGGGGACAACTTTAGAGCCCTGGCGCGGTGGG

|||||

ALLELE2: 226 AACGGAAAC----AGAGAGAGAGAGAGACCTTGTTCAAAGCAACGGGGACAACTTTAGAGCCCTGGCGCGGTGGG

ALLELE1: 291 GGTCAATAAGCGTAACTTGGCTGAGGAGAGCCTCGGCG-tCGTCCTTCTGAAGCAGAGAGAGAAAGAG-CaCGAGA

|||||

ALLELE2: 299 GGTCAATAAGCGTAACTTGGCTGAGGAGAGCCTCGGCGc-CGTCCTTCTGAAGCAGAGAGAGAAAGAGcC-CGAGA

ALLELE1: 365 CCAAGAGAAACTCCTCGGAAGCAACGGGAATTC 397

|||||

ALLELE2: 373 CCAAGAGAAACTCCTCGGAAGCAACGGGAATTC 405

b.

E_{ATC}M_{CGA}87 BAC extension and TaqMan probe and primers

Allele 1: ttatcatccaaaaattgaaaactttaatacaaaatgcacatttttgagccattcatgctc
|||||

TMA5F

Allele 2: ttatcatccaaaaattgaaaactttaatacaaaatgcacatttttgagccattcatgctc
|||||

TMA5R

Allele 1: atctcttggtctgagtccttatcattctgtggattgaattcattggtttctctttat-----GACATTGTT
|||||

TMA5-RE

Allele 2: atctcttggtctgagtccttatcattctgtggattgaattcattggtttctctttatcattgacattggtt
|||||

TMA5R

TMA5-S

Allele 1: GCCAAGTAATACTACTATATAAATTGAGATTGGGTTTCTGATAACCGTGGTCGTTAAatactatataataacc
|||||

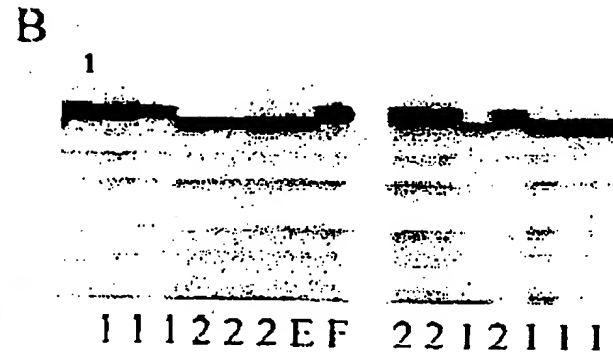
GCCAAGTAATACTACTATATAAATTGAGATTGGGTTTCTGATAACCGTGGTCGTTAAatactatataataacc
|||||

ATG4BACF

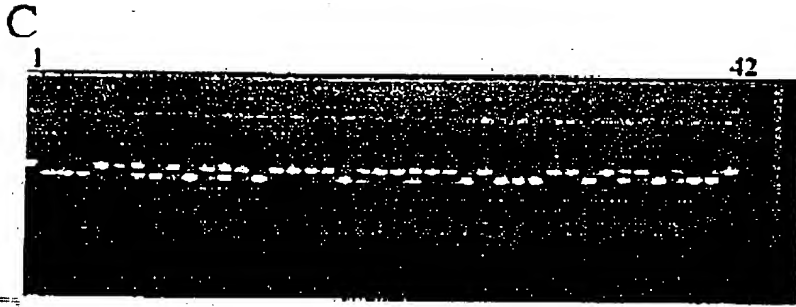
Figure 2



1111 2 11 2 111 2 1111 1112 HH221 22HH1212 111 2 111FE



111222EF 2212111



211122H1212 H 2122221H22 H2212 1 11 22 12 H21H1 F E.



2 121H11121222H2121 21 11 112122 122222 12

0972134 012501
F05270 4672/60

[illegible]

Figure 4

≈ 12 kb

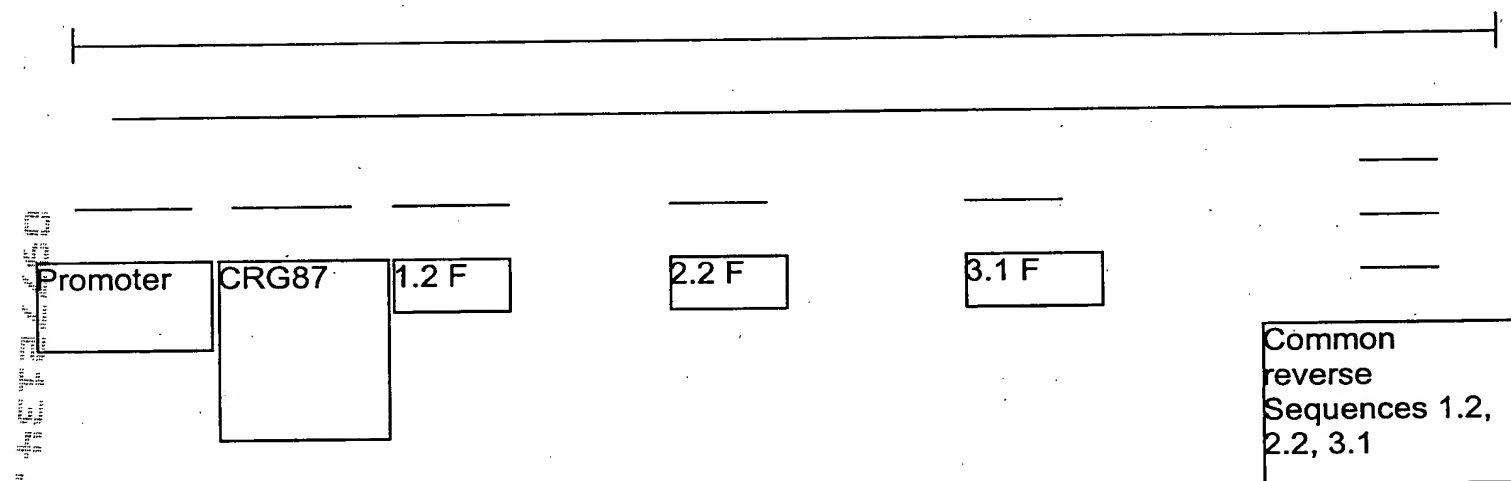
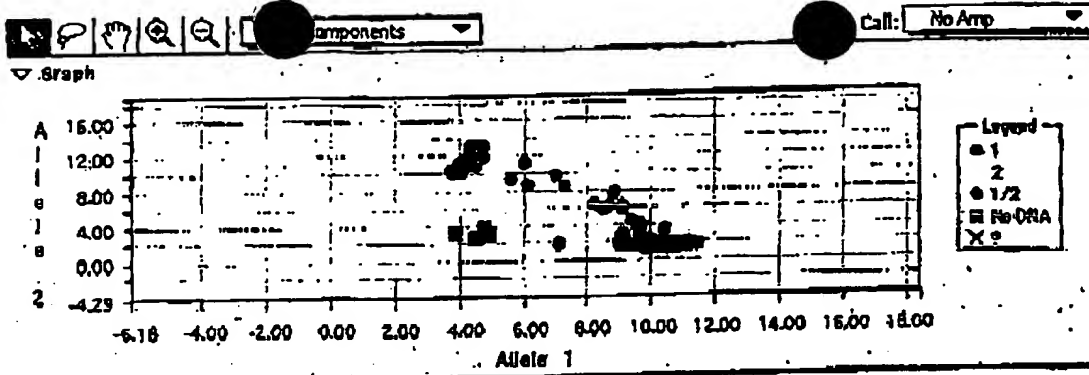


Figure 5



Panel A

Plate

Tray

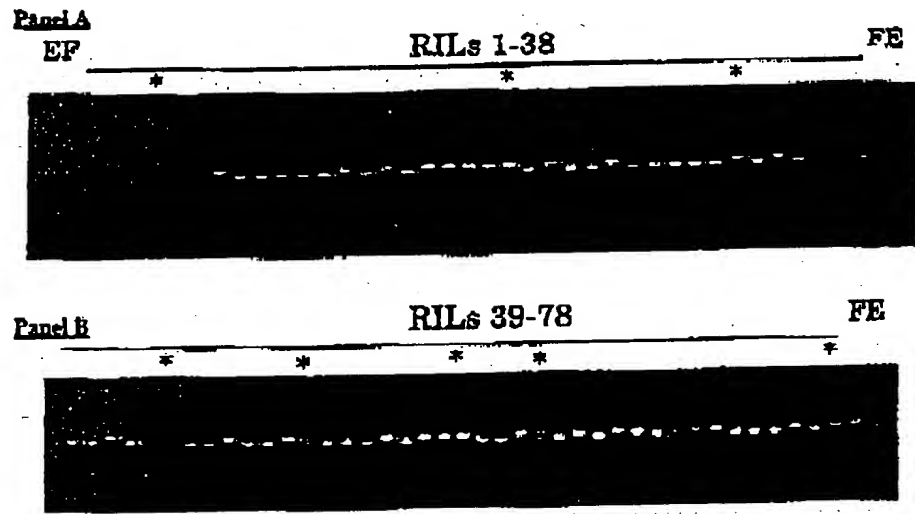
	1	2	3	4	5	6	7	8	9	10	11	12
A	1	2	1	2	1	1	2	2	1	2	1	2
B	2	1	1	1	1 and 2	1	1	1	1	2	1	2
C	1	1	2	1	1	2	1	2	2	1	1	1
D	1	1	2	2	2	1	2	2	1	1	1	1
E	No Amp	1	2	1	1	No Amp	1	1 and 2	2	1	1	No Amp
F	1	1	1	1	1	1	1	2	2	2	2	No Amp
G	2	1	1 and 2	1	2	1	1	1	1	1	1	No Amp
H	1	1	1	1	1	1	1	2	1	1 and 2	1 and 2	1

Panel B

20250414 16:26:59

Figure 6

6



0972434.012501

1

[illegible]

Figure 7B

TCTTTCATTCTTATATTATTTTTGCCTGTTTGAATGCTTGAATTTGTACATACTCATAC
TACAATAAGGTGTAGTTCTGGTTAATTTTACCTCTACCTCAAAGCTGGGGTGTAATTCT
GTTTCCTCCAAGGCACATAATAGTTGAAAATAGTTCTCAGGAGCATTCAATTGTTTATTC
TGCAAGATTCTCTTTCACGGCTGCTATCTTCTATGCATGCCCTGCCCATAAATGCATTA
TGAAGAATTGTAACGGCTGTGTTTTTGGACTTCTTCAAAAAGTTTATGTTATTGCCAGG
TGTATATATCAACATGTTTTAAAGATTTTCAAACAATCAGGTTTTAGATGTGGGTTTGC
ATGCATGAGATTGGACTAGTGCCTTGATGTAGTATAAAATATAAATTGTCCAATCAAG
CACCTCTACATGTCCAAATAATGGGCCTTATGAACTTAATTTTTTAATTACAACTA
CAGTAATCTTTTTGAATAAAGATTTACAAATTACAACNGACATGTGAAGCNGCATCTTT
NATTGNCAATCTTTCAGTTACTCTATTATTTTCTGCN

3105bp

3105bp

Figure 7C

Rhg1 Peptide

NGRSGKDSGYGAC**SGGW**GIKCAQGQVIVIQLPWKGLRGRIT
DKIGQLQGLRKL**SLHD**NQIGGSIP**STLGLLP**NLRGVQLFNNRLG
SIP

LSLGFCPLLQSLDLSNNLLTGAIP
YSLANSTKLYWLNL**SFNS**FS**SGPLP**
ASLTH**SFSLTFLSLQ**NNNL**SGSLP**NSWGG
NSKNG**F**FRLQNLIIDHNFFTGDVP
ASL**GS**LRELNEI**SLSH**NKF**SGAIP**
NEIGTL**SRLK**TLDI**SNNAL**NGNLP
ATLSNL**SSLTLLNA**ENLLDNQIP
QSLGRLRNLSVLILSRNQ**FSGHIP**
SSIANISSLRQLDLSLNN**FSGEIP**
VSFDSQRSLNLSNV**SYNSLSGSVP**

PLLAKKFNSSSFVGNIQLCGYSP
STPCLSQ

APSQGVIA**PPEVSKHHHR**

KLSTKDIILIVAGVLLVVLIIILCCVLLFCLIRKRS

TSKAGNGQATEGRAATMRTEKGVP**PVAGGDVEAGGEAGGKLVHF**
DGPMAFTADDLLCATAE**IMGKSTYGT**VYKAILEDGSQVAVKRLR
EKITKGHREFESEVSVLGKIRHPNGLALRAYYLGPKGEKLLVFD
YMSKGGLLLFYMEGSCAGSFIKVLCVLVFNYNLEFYLSNLYNSN
RRTVQTKTPKEQH**LXFNI**PYQ

-SEIFSWSS-CRGN-TFIIGHKMKIXQDLAVACSPSP**PETSYMD**
LXSSNV**CX-NXMLKLQFWSFSVDVNCC-FQRDSYSWSIGIPGT-**
ALKAQESKH-N-YLQSWCYLV**RTPNEEITWGVYEWTRFASVGCL**
SCQRGVDK-GF-CRLDERCIHSWRRVAKHVEARFALC-SFSIS
TTRSSSSSPAAGRD-TREISHSQSHLPGRPLEPYSESY

Figure 7D

Sequences producing significant alignments:		Score (bits)	E Value
pir:T46070	hypothetical protein T18N14.120 - Arabidopsis thaliana	632	e-180
pir:T47727	hypothetical protein F18O21.60 - Arabidopsis thaliana	344	1e-95
pir:T04587	hypothetical protein F23E13.70 - Arabidopsis thaliana	268	9e-71
pir:T49038	hypothetical protein T5P19.20 - Arabidopsis thaliana	257	2e-67
pir:T48210	hypothetical protein T20L15.160 - Arabidopsis thaliana	241	1e-62
pir:T05050	protein kinase homolog M3E9.30 - Arabidopsis thaliana	238	2e-61
pir:T18536	receptor-like protein kinase - Ipomoea nil (Japanese...	236	3e-61
pir:T48489	receptor-like protein kinase - Arabidopsis thaliana	236	5e-61
pir:T10515	disease resistance protein Cf-2.2 - currant tomato	235	6e-61
pir:T10504	disease resistance protein Cf-2.1 - currant tomato	235	6e-61
pir:T30553	disease resistance protein Hcr2-5D - tomato	229	4e-59
pir:S27756	receptor-like protein kinase 5 (EC 2.7.1.-) precursor...	227	1e-58
pir:T48499	receptor-like protein kinase-like protein - Arabidop...	226	3e-58
pir:T46033	receptor protein kinase-like protein - Arabidopsis t...	226	4e-58
pir:T05335	hypothetical protein F1C12.190 - Arabidopsis thaliana	221	1e-56
pir:T10636	hypothetical protein T13K14.100 - Arabidopsis thaliana	219	7e-56
pir:T05898	hypothetical protein F6H11.170 - Arabidopsis thaliana	218	1e-55
pir:T45717	receptor-kinase like protein - Arabidopsis thaliana	212	7e-54
pir:T05322	hypothetical protein F18F4.240 - Arabidopsis thaliana	211	1e-53
pir:T10659	probable serine/threonine-specific protein kinase (E...	211	2e-53
pir:T03784	probable receptor protein kinase - rice	208	1e-52
pir:T50851	receptor protein kinase homolog [imported] - soybean	201	1e-50
pir:T45647	receptor protein kinase-like protein - Arabidopsis t...	199	5e-50
pir:T45718	receptor-kinase like protein - Arabidopsis thaliana	199	7e-50
pir:T50850	receptor protein kinase homolog [imported] - soybean	199	7e-50
pir:T45645	receptor kinase-like protein - Arabidopsis thaliana	196	3e-49
pir:T09356	brassinosteroid-insensitive protein BRI1 - Arabidops...	196	3e-49
pir:T00712	protein kinase homolog F22O13.7 - Arabidopsis thaliana	190	2e-47
pir:A57676	protein kinase Xa21 (EC 2.7.1.-), receptor type prec...	190	3e-47
pir:S39476	kinase-like transmembrane protein TMKL1 precursor - ...	188	1e-46
pir:T02154	protein kinase homolog T1F15.2 - Arabidopsis thaliana	188	1e-46
pir:T10725	protein kinase Xa21 (EC 2.7.1.-) A1, receptor type - ...	186	5e-46
pir:T05897	protein kinase homolog F6H11.160 - Arabidopsis thaliana	184	1e-45
pir:T04313	protein kinase Xa21 (EC 2.7.1.-), receptor type - rice	183	3e-45
pir:T10727	protein kinase Xa21 (EC 2.7.1.-) D, receptor type - ...	181	2e-44

Figure 7E

>pir:T46070 hypothetical protein T18N14.120 - Arabidopsis thaliana
Length = 836

Score = 632 bits (1613), Expect = e-180

Identities = 329/550 (59%), Positives = 400/550 (71%), Gaps = 2/550 (0%)

Frame = +1

Query: 7 RSGKDSGYGACSGGWVGIIKCAQGVVIVQLPWKGLRGRITDKIGQLQGLRKLKSLHDNQIG 186
+S +S GW GIKC +GQV+ IQLPWKGL G I++KIGQL LRKLSLH+N I
Sbjct: 72 KSWNNSASSQVCSGWAGIKCLRGQVVAIQLPWKGLGGTISEKIGQLGSLRKLKSLHNNVIA 131

Query: 187 GSIPSTLGLLPNLRGVQLFNNRLTGSIPLSLGFCLCFKSLDLSNNLLTGAIPYSLANSTK 366
GS+P +LG L +LRGV LFNNRL+GSIP+SLG C ++LDLS+N LTGAIP SL ST+
Sbjct: 132 GSVPRSLGYLKSRLGVYLFNNRLSGSIPVSLGNCPLLQNLDLSSNQLTGAIPPSLTSTR 191

Query: 367 LYWLNLFSNFSFSGPLPASLTHSFLTFLSLQNNNLSGSLPNSWGGNSKNGFFRLQNLILD 546
LY LNLSFNS SGPLP S+ S++LTFL LQ+NNLSGS+P+ + NG L+ L LD
Sbjct: 192 LYRLNLFSNLSLGPPLPVSVARSYTLTFLDLQHNNLSGSIPDFF---VNGSHPLKTLNLD 247

Query: 547 HNFFTGDVPASLGSLRELNEISLSHNKFSGAIPNEIGTSLRLKTLDISNNALNGNLPATL 726
HN F+G VP SL L E+S+SHN+ SG+IP E G L L++LD S N++NG +P +
Sbjct: 248 HNRFSGAVPVSLCKHSLLEEVSIHNLQSGSIPRECGPLHLQSLDFSYSINGTIPDSF 307

Query: 727 SNLSSSLTLLNAENLLDNQIPQSLGRLRNLSVLILSRNQFSGHIPSSIANISSLRQLDLS 906
SNLSSL LN E+N L IP ++ RL NL+ L L RN+ +G IP +I NIS +++LDLS
Sbjct: 308 SNLSSSLVSLNLESNHLKGPIPDAILRLHNLTELNLKRKNKINGPIPETIGNISGIKKDLS 367

Query: 907 LNNFSGEIPVSFDSQRSLNLFNVSYNLSGSLVPPLLAKKFNSSSFVGNQLCGYSPSTPC 1086
NNF+G IP+S L+ FNVSYN+LSG VPP+L+KKFNSSSF+GNIQLCGYS S PC
Sbjct: 368 ENNFTGPIPLSLVHLAKLSSFNVSYNLTSGPVPPVLSKKFNSSSFVGNQLCGYSSNPC 427

Query: 1087 LSQAPSQGVIAAPP--PEVSKHHHRKLSKTDIILIVAGVLLVVLIIILCCVLLFCLIRKRS 1260
+ + P + + HHRKLS KD+ILI G LL +L++LCC+LL CLI+KR+
Sbjct: 428 PAPDHHHPLTSLPTSSQEPRKHHHRKLSVKDVILIAIGALLAILLLCCILLCCLIKKRA 487

Query: 1261 TSRPGTAKPPEGRAATMRTEKGVPPVAGGDVEAGGEAGGKLVHFDGPMFTAADDLLCATA 1440
K +G+ T +EK V G AGGE GGKLVHFDGP FTADDLLCATA
Sbjct: 488 -----ALKQKDGKDKT--SEKTVSAGVAGTASAGGEMGGKLVHFDGPFVFTAADDLLCATA 540

Query: 1441 EIMGKSTYGTVYKAILEDGSQVAVKRLREKITKGHREFESESVLGKIRHPNVLALRAYY 1620
EIMGKSTYGT YKA LEDG++VAVKRLREK TKG +EFE EV+ LGKIRH N+LALRAYY
Sbjct: 541 EIMGKSTYGTAYKATLEDGNEVAVKRLREKTTKGVKEFEFEVLTALGKIRHQNLLALRAYY 600

Query: 1621 LGPKGEKLLGFD 1656
LGPKGEKLL FD
Sbjct: 601 LGPKGEKLLVFD 612

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

Figure 7F

Score = 185 bits (464), Expect = 1e-45
Identities = 93/161 (57%), Positives = 122/161 (75%), Gaps = 3/161 (1%)
Frame = +2

Query: 1943 GLVCLHSQENIIHGTSHPMCGLMKNKC*NS---DFGLFRVDVNCC*FQDSYSWSIGYR 2113
GL LHS EN+IH + ++ ++ N+ D+GL R+ + + ++GYR
Sbjct: 647 GLAHLHSNENMIH--ENLTASNILLDEQTNADYGLSRLMTAAAATNVIATAGTLGYR 704

Query: 2114 APELSKLLKKANTKTDIYSLGVILLELLTRKSPGVSMNGLDLPQWVASVVKEEWTNEVFDA 2293
APE SK+K A+ KTD+YSLG+I+LELLT KSPG NG+DLPQWVAS+VKEEWTNEVFD
Sbjct: 705 APEFSKIKNASAKTDVYSLGIIILELLTGKSPGEPTNGMDLPQWVASIVKEEWTNEVFDL 764

Query: 2294 DLMRDASTVGDELLNTLKLALHCVDPSPSARPEVHQVLQQLKRL 2425
+LMR+ +VGDELLNTLKLALHCVDPS+ARPE +QV++QL+ +
Sbjct: 765 ELMRETQSVGDELLNTLKLALHCVDPSPAARPEANQVVEQLEEI 808

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.